North Dakota Department of Health
November – December 2003

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2003 Year in Review

2003 was a year of firsts in public health. Smallpox vaccinations were initiated in the United States for the first time in more than 25 years. The World Health Organization (WHO) issued a global alert after a disease emerged for the first time… Severe Acute Respiratory Disease (SARS). The first cases of monkeypox were reported in the United States, and an embargo was initiated on animal trade and importation. West Nile virus emerged in many states for the first time and the number of reported cases soared in states where it had previously existed. And to end the year, an early influenza season was characterized by a new and severe influenza A strain, along with an unexpected shortage of flu vaccine.

The North Dakota Department of Health (NDDoH) responded to many firsts as well. NDDoH contributed to the development of emergency preparedness and response plans new to the realm of public health. These include a smallpox vaccination plan and SARS planning. In addition, the NDDoH also has maintained and improved existing surveillance activities for infectious diseases such as West Nile virus and influenza.

The year 2003, like years before, was filled with new and old infectious disease challenges. This issue of the Epidemiology Report will review some of these infectious disease issues.

Smallpox Preparedness and Vaccination

Following the September 11 World Trade Center attack in 2001 and subsequent use of anthrax as a terrorism agent in letters, the Centers for Disease Control and Prevention (CDC) implemented the smallpox vaccination plan because it was feared that terrorists may threaten the United States by using the smallpox virus as a biological weapon. Phase I of this plan was to enlist volunteers in the public health and medical fields to be vaccinated, to be trained to respond to a smallpox outbreak and to vaccinate patients rapidly who might be infected with smallpox.

During this past year, 414 public and private health-care professionals were vaccinated for smallpox in North Dakota. Nationally, about 40,000 civilian health-care and public health workers and more than 550,000 military personnel were vaccinated for smallpox in the United States.

The vaccination program was hampered by the concerns of many medical and public health professionals about possible adverse effects associated with smallpox vaccination. In April 2003, two cases of myocardial infarction were reported to the CDC in smallpox vaccine recipients. These initial reports were followed by 22 cases of myocarditis/pericarditis and two cases of angina. Because of these adverse effects, the CDC responded by adding people with pre-existing heart conditions to the list of individuals who should be deferred from receiving the vaccine due to contraindications. The Advisory Committee on Immunization Practices (ACIP) recommended in June 2003 that all smallpox vaccinations cease until research could be conducted on the cardiac complications.

The ACIP did, however, recommend that smallpox preparedness planning continue with efforts to include:

- Surveillance for early detection of possible smallpox cases.
- Procedures to investigate possible smallpox cases and to institute immediate control measures to contain disease.
- Plans at the hospital, community and regional level to provide for the care of smallpox cases in the event of an outbreak.
- Plans for mass vaccinations of large population groups (up to and including the entire population) in a short period of time.
- Training of public health and health-care response teams, as well as personnel who would staff mass vaccination clinics.
- Educational materials directed at many groups, including the general public.

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EQUAL OPPORTUNITY EMPLOYER.

- Development of laboratory capacity.
- Formation of stockpiles of vaccines and necessary supplies and equipment.
- Conducting drills and exercises.
- Smallpox vaccination within the context of currently recommended response teams and state and local response plans.

North Dakota continues work on its Smallpox Response Plan and Guidelines, as well as other educational, training and emergency preparedness and response. An exercise, Vigilant Victor, was conducted September 24 through 25, 2003, to provide training and to evaluate our emergency response capabilities.

For more information about the Smallpox Response Plan and Guidelines, visit www.health.state.nd.us/ and www.cdc.gov/smallpox.

SARS Planning

SARS was first identified in February 2003 when the WHO received a report of an atypical pneumonia case in Hanoi, Vietnam, who had become ill after traveling to China and Hong Kong. The case turned out to be one of the first infamous "super-spreaders" of SARS, infecting 20 hospital staff. Within a few days, 150 new cases were reported in other countries, including Canada, Indonesia, Philippines, Singapore and Thailand, and continued to spread to other parts of the world.

On March 12, 2003, WHO issued the first global alert in history for "severe, acute respiratory syndrome of unknown origin." In just four months, the SARS virus spread globally through international travel and disproportionately in health-care workers, other hospital patients and visitors. A total of more than 8,000 cases and 700 deaths were reported to the WHO. The WHO reported 29 confirmed SARS cases and no deaths in the United States, of which 97 percent were imported from affected countries.

Sophisticated laboratory technology and secure intranet correspondence among scientists led to the identification of a novel corona virus as the causative agent of SARS (SARS-CoV) within days. It was traditional public health practices such as isolation, quarantine, contact tracing and reporting that proved most effective in controlling the outbreak and preventing further transmission. Control and prevention efforts proved effective when SARS transmission ended in mid-July 2003.

SARS-CoV infection was again identified in 2004 when in early January a 32-year-old man in the Guangdong province of China was reported with onset of fever and headache in mid-December 2003. Chest X-rays demonstrated changes in the lower right lung, and the patient was isolated as laboratories performed additional tests to confirm SARS Co-V. Two additional suspect SARS cases also were reported near the same area in China as the initial case. One of the suspect cases, a 20-year-old female who was a waitress at a restaurant, was later confirmed to have SARS. Samples collected from cages that housed civets at the restaurant where the waitress worked tested positive for traces of the SARS-CoV. However, evidence that civets transmit SARS-CoV to humans remains inconclusive.

The other suspect case, a 35-year-old male, was found to fit the WHO case definition of a probable SARS case, and further testing is being conducted to confirm SARS infection. A fourth case of SARS was confirmed in late-January in a 40-year-old director of a hospital and practicing physician from Guangdong Province who developed SARS symptoms on Jan. 7, 2004. No links have been made between the four cases, and all have recovered from the illness. All contacts have been traced and are feeling well. The source of exposure has not been determined.

The recent confirmed SARS cases in China stress the importance of planning for the possible resurgence of SARS. These are the first reported confirmed cases of nonlaboratory-acquired SARS since the abrupt end of the 2003 SARS outbreak last July.

Although the four reports of SARS cases in China are disconcerting, the WHO does not consider this event a global health threat. Public health officials and clinicians are recommended to heighten awareness and surveillance for febrile respiratory illness associated with travel from the Guangdong province of China and/or contact with a SARS patient. Cases of avian influenza A virus (H5N1) recently reported in Asia also have a presentation similar to SARS infection and may be a confounding factor in interpretation of laboratory tests and diagnosis.

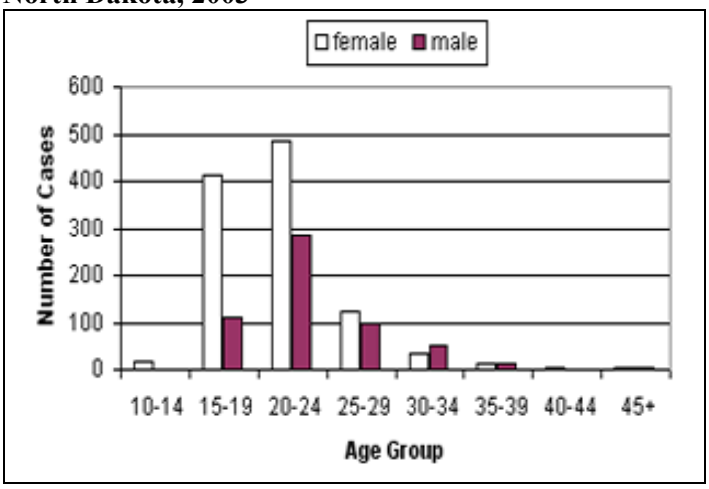
The CDC and the NDDoH urge health officials and clinicians to develop a plan for the possibility of widespread SARS-CoV transmission. The natural reservoir of SARS Co-V is unknown, and, as the recent confirmed cases in China prove, the possibility of the reemergence of community SARS transmission exists. Guidelines are available from the CDC for community preparedness and response to SARS at www.cdc.gov/ncidod/sars.

Sexually Transmitted Diseases on the Increase

Preliminary STD data for 2003 indicate reported cases of chlamydia, gonorrhea and syphilis increased in North Dakota compared to 2002. Chlamydia increased 33 percent, from 1,254 reported cases in 2002 to 1,663 in

2003. Of the 1,663 cases, females accounted for 67 percent and males, 33 percent. For both 2002 and 2003, the highest number of reported cases of chlamydia by age group continues to be in the 20- to 24-year-olds and the 15- to 19-year-olds (Figure 1).

Figure 1. Reported Cases of Chlamydia by Age Group North Dakota, 2003*



*Preliminary data

While reported cases have increased, so have the number of females being screened and the number of males being tested. During 2003, 13,171 chlamydia tests from Region VIII participating providers were performed at the Division of Microbiology, a 60.7 percent increase from the 8,195 test performed during the same time period in 2002. The rate of positive tests also has increased, with 7.6 percent of all chlamydia tests performed by the Division of Microbiology testing positive, compared to 4.2 percent in 2002.

Gonorrhea increased to 101 reported cases in 2003. This is a 40 percent increase compared to 72 cases reported during the same time period in 2002. A cluster of 15 gonorrhea cases occurred in Burleigh County in October. A small cluster continues in Richland County, with five cases reported since September.

Two cases of infectious syphilis, one primary and one secondary, were reported during 2003. The follow-up investigation indicated that both infections were likely acquired out of state. One case involved a male who had sex with males. Syphilis rates are increasing nationally, primarily due to an increase of males who have sex with males.

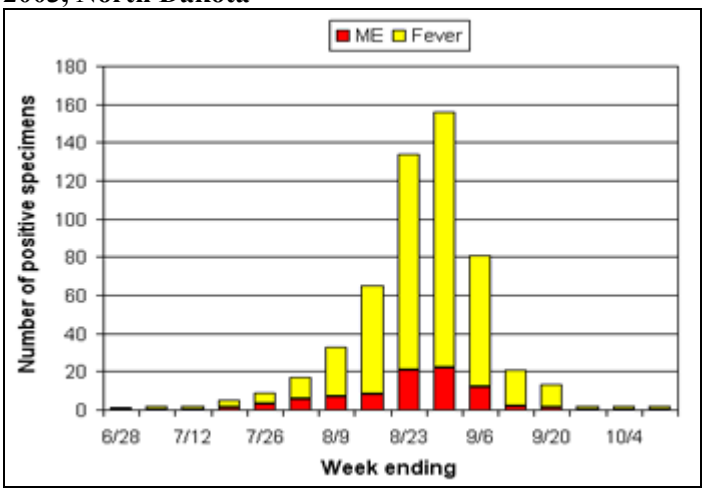
Health-care providers should screen young sexually active females for chlamydia. Patients presenting with symptoms suggestive of chlamydia or gonorrhea and sexual partners of gonorrhea cases also should be tested for gonorrhea. Patients presenting with genital lesions or body rash and who have a risk factor for syphilis, as well as all men who have sex with men, should be tested for syphilis.

West Nile Virus

The NDDoH West Nile virus (WNV) surveillance program reinitiated human arboviral encephalitis surveillance in mid-May 2003, which continued until November 2003. The Division of Microbiology performed WNV testing on 3,209 human samples that resulted in 620 positive human cases identified in 2003. In addition to West Nile testing, 1,000 human specimens also were tested and found to be negative for Western Equine Encephalitis, St. Louis Encephalitis, Eastern Equine Encephalitis and LaCrosse virus.

Of the 620 cases reported, 578 cases have been contacted and interviewed by NDDoH field epidemiologists. Of these 578 cases, 86 (14.9%) met the case definition of West Nile meningoencephalititis, with the remainder (492 cases or 85.1%) classified as West Nile fever. Four of the 84 meningoencephalitis cases were fatal. For the completed cases, the peak of illness onset occurred the week ending Aug. 30, 2003 (Figure 2). In 2002, only 17 cases of West Nile virus infection were reported to the NDDoH. Two of these cases were identified with meningoencephalitis, while 15 were classified with West Nile fever. Two of the cases reported in 2002 were fatal.

Figure 2. Meningoencephalitis (ME) and West Nile Fever Cases by Date of Onset, June 2003 to October 2003, North Dakota



The symptoms most commonly reported by the WNV cases were fatigue (85.8%), headache (83.0%), muscle pain and weakness (78.9%), fever (74.6%) and joint pains (62.6%). Additional symptoms included rash, stiff neck, diarrhea, confusion, conjunctivitis, eye pain, nightmares, blurred vision, chills and skin sensitivity.

The North Dakota State University Veterinary Diagnostic Laboratory (ND-VDL) tested 169 horses for WNV infection. Of the 169 samples submitted, 41 horses tested positive for WNV. In addition, more than 750 birds were collected and sent to the ND-VDL for WNV testing. Of those, 155 specimens tested positive. An additional 31 birds were sent to the United States Geographical

Survey National Wildlife Health Center in Madison, Wisc. for WNV testing. Of those, 10 birds were identified as positive for WNV. In 2002, 313 birds were sent to Wisconsin for testing and 65 tested positive.

Statewide mosquito monitoring was enhanced with the New Jersey Trap Network expanding from 53 to 91 trapping sites. Live trapping of mosquitoes was established at nine separate sites throughout the state and was conducted weekly from July 1, 2003, until Sept. 18, 2003. During this time, 96 mosquito pools were tested for WNV, with 11 pools yielding positive results.

Additional information about the mosquito trapping network, WNV and other arboviruses and program partners are provided on the North Dakota WNV website at www.ndwnv.com.

2003-2004 Influenza Season

In 2003, cases of influenza occurred in the United States as early as September and continued to increase. As of December 20, the WHO and the National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories reported a total of 11,982 positive influenza tests, 29.9 percent of the total number of specimens received for testing. Of these, 11,902 (99.3%) were Influenza A (H3 N2) viruses. Of the 326 influenza A isolates submitted to the CDC, 75 percent (246/326) were identified as the drift variant A/Fujian/411/2002 (H3N2) and 25 percent (80/326) as the vaccine strain A/Panama/2001/99 (H3N2).

The drifted Fujian strain was identified in the Southern Hemisphere during the previous influenza season, but due to the short time period for vaccine production, it was not included in the current vaccine. However, the current influenza vaccine remains the primary method for preventing influenza and its severe complications and is likely to have cross reactivity against the Fujian strain. Isolates sent to the CDC by the NDDoH were subtyped and were found to be the Fujian strain. North Dakota-specific information about influenza surveillance is available at www.ndflu.com.

Influenza Vaccine Shortage

Due to an early and severe influenza season, an increased demand for the influenza vaccine resulted in a vaccine shortage. As a result, priority groups for vaccination, including those at highest risk of developing influenza complications, were established. The priority groups include:

- Children age 6 months to 23 months.
- People age 65 and older.
- Women at least 14 weeks pregnant.
- Adults and children who have a chronic health condition, such as heart disease, diabetes, kidney disease, asthma, cancer and HIV/AIDS.

Although few studies exist to demonstrate the effectiveness a single dose will provide, it is felt that one dose will provide some protection against influenza. Therefore, it is recommended that all children younger than 9 years of age receive at least one dose of influenza vaccine.

The FDA also approved a new, live-attenuated vaccine (FluMist™, Wyeth) for healthy individuals between 5 and 49 years of age. Blue Cross Blue Shield of North Dakota recently approved insurance coverage of the live-attenuated vaccine. FluMist™ should not be given to immunocompromised individuals. The CDC recommends that health-care workers who have received live-attenuated vaccine should avoid close and prolonged contact with severely immunocompromised patients for six days after vaccination.

Active Influenza Surveillance

The NDDoH has implemented active surveillance for influenza-associated pediatric deaths and cases of encephalopathy among children younger than 18 in all hospital ICUs.

A pediatric death is considered to be influenza-associated if laboratory diagnostic testing of clinical or autopsy specimens identifies influenza viral infection.

A pediatric encephalopathy case is considered to be influenza-associated if ALL of the following are met:

- Altered mental status or personality change.
- Duration of altered mental status more than 24 hours.
- Occurring within five days of an acute febrile illness.
- Any laboratory or rapid diagnostic test evidence of influence virus infection.

As of Jan. 26, 2004, 121 influenza-associated deaths among children younger than 18 have been reported to the CDC. Age distribution for the first 42 influenza-associated deaths reported among children is listed in Table 1. Thirty-five (38%) of the children had underlying chronic medical conditions, and 41 (44%) did not. The previous medical conditions for 17 (18%) were unknown. Invasive bacterial co-infections were reported in 15 of the children.

Influenza virus infection was laboratory confirmed in all of the children by rapid antigen testing, direct fluorescent antibody staining, reverse transcriptase polymerase chain reaction or by viral culture. Though some models exist, the average number of influenza-associated deaths of children per year is unknown since influenza-associated deaths are not reportable.

Table 1. Age distribution of 42 influenza-associated deaths reported of children aged younger than 18 United States, 2003-2004 Influenza Season*

Age	Number	(%)
<6 mos	1	(2)
6-23 mos	13	(31)
2- 4 yrs	9	(21)
5-11 yrs	9	(21)
12-17 yrs	10	(24)

* Preliminary data as of December 17, 2003.
Source: Centers for Disease Control and Prevention MMWR. 2003; Vol52.

Epi Report in New Format for 2004!

This November-December issue of the NDDoH Epidemiology Report is the last printed copy to be mailed. Beginning with the January-February issue of 2004, the Epi Report will be posted on the NDDoH Disease Control website at www.health.state.nd.us/disease. E-mail jgoplin@state.nd.us if you would like to be e-mailed a notice of each new issue of the Epi Report as it is posted on the website.

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Summary of Selected Reportable Conditions North Dakota, 2002-2003					
Reportable Condition	**November-December 2003***	**January-December 2003***		**November - December 2002**	**January-December 2002**
Campylobacteriosis	15	78		6	83
Chlamydia	238	1684		190	1250
Cryptosporidiosis	1	15		3	41
E. coli, shiga toxin positive (non-O157)	0	12		1	4
E. coli O157:H7	0	13		1	20
Enterococcus, Vancomycin-resistant (VRE)	2	12		1	1
Giardiasis	7	45		6	47
Gonorrhea	18	99		9	74
Haemophilus influenzae (invasive)	2	6		1	7
Hepatitis A	0	2		1	4
Hepatitis B	0	2		2	8
HIV/AIDS	3	22		4	22
Legionellosis	0	1		0	1
Lyme Disease	0	0		0	1
Malaria[1]	0	1		0	1
Meningitis, bacterial[2] (non meningococcal)	0	5		0	1
Meningococcal disease	0	3		0	4
Pertussis	0	7		0	9
Q fever	0	1		0	0
Rabies (animal)	4	57		10	59
Salmonellosis	7	43		5	55
Shigellosis	3	10		1	22
Staphylococcus aureus, Methicillin-resistant (MRSA)[3,4]	142	1214		190	539
Streptococcal disease, Group A[5] (invasive)	2	18		2	5
Streptococcal disease, Group B[5] (infant < 3 months of age)	0	3		1	3
Streptococcal disease, Group B[5] (invasive[6])	6	30		7	15
Streptococcal disease, other[5,7] (invasive)	1	6		0	0
Streptococcal pneumoniae[5], (invasive, children < 5 years of age)	2	9		0	3
Streptococcal pneumoniae[5] (invasive[8])	13	58		10	39
Streptococcus pneumoniae[5], drug resistant	0	3		1	2
Tuberculosis	2	6		0	6
West Nile Virus Infection[9]	2	618		17	17

*Provisional data

[1] *Plasmodium falciparum*, foreign travel

[2] Meningitis caused by *Staphylococcus aureus* and *Streptococcus pneumoniae.*

[3] 2003 year-to-date data includes MRSA isolated from all sites.

[4] 2002 year-to-date data includes invasive sites only prior to August 1.

[5] Includes invasive infections caused by streptococcal disease not including those classified as meningitis.

[6] Includes invasive infections of streptococcal, Group B, disease in persons $\geq$ 3 months of age.

[7] Group G (5); serotype unknown (1)

[8] Includes invasive infections caused by *Streptococcus pneumoniae* in persons $\geq$ 5 years of age.

[9] West Nile Virus Encephalitis year-to-date 2003 (86); 2002 (2)